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Smartphone Computing Moving Into Docs' Offices

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More and more doctors are using smartphones -- essentially PDAs that can make phone calls -- in their daily lives, yet few of them are integrating the devices into their clinical practice. New clinical software designed specifically for smartphones is helping to overcome some barriers, yet there are other roadblocks preventing smartphones from becoming much more common in medicine than they are now.

As the average cell phone becomes "smarter" and telecommunications companies aggressively expand mobile networks, consumers in both developed and developing countries increasingly have a wireless computer in their pockets, according to Joel Selanikio, a pediatrician in Washington, D.C. Selanikio's not-for-profit company DataDyne.org makes open-source public health data collection software for PDAs and cell phones. The software is used by the World Health Organization, the World Bank and other organizations around the globe.

Unlike laptops and tablet PCs, smartphones are small enough to carry everywhere, their battery life lasts longer than a clinical shift and they have no standby or hibernation waiting times.

Yet, however convenient, many physicians are reluctant to carry and learn how to use smartphones in their medical practice. Others find it difficult to enter data into the devices using handwriting recognition. A further barrier is that hospital IT departments must provide support for doctors using the devices.

Vendors Step Up to the Plate

The medical software sector has seen a flurry of activity surrounding the smartphone market in the last few months. Epocrates recently announced the availability of its drug reference software for BlackBerrys, while Skyscape announced the release of all its medical textbooks for the BlackBerry platform. Thomson Healthcare has been providing medical software for BlackBerry devices since 2006.

The publicity surrounding the release of Apple's iPhone prompted yet another wave of companies pledging support for its platform. eClinicalWorks practice management software is designed for Web browsers, including those operating on iPhone, as is the American Academy of Family Physicians' CEND Personal Health Record Web site and Life Record's electronic health records software.

Unbound Medicine, a provider of evidence-based medicine content, announced in July 2007 that its clinical references Web site works on iPhones. Meanwhile, Epocrates announced the availability of iPhone software at an Apple press conference in February.

All of this is in addition to the existing products from medical software vendors for handheld computers and smartphones running the Palm, Pocket PC and Windows Mobile operating systems.

The technology advances come at a time when sales of nonsmartphone handhelds continue to fall. IDC estimates that worldwide sales in the third quarter of 2007 were just under \$730,000, a 40% drop from the 1.2 million units sold during the same quarter in 2006.

Rises in smartphone sales are much greater than this drop. In-Stat estimates double-digit growth every year for the next five years by traditionally PDA-centric vendors like Palm, as well as newer smartphone vendors like BlackBerry and the most recent and famous entrant, Apple.

Hospitals Integrating Smartphones Into Clinical Workflow

At Virginia Commonwealth University Medical Center, a pilot study with emergency department physicians has been successful enough to justify providing smartphones to each physician in the hospital.

The devices access data from a central EHR system run by Cerner. Physicians also can use their smartphones to search textbooks and the Internet, send and receive e-mails, and make and receive telephone calls with hospital staff. The hospital's investment largely is covered by the increased charge capture from enabling billing by the bedside with the same PatientKeeper software that provides the Cerner medical records for patient care.

IT teams are still learning how to get the best value from technology like smartphones. At VCU, two earlier pilots uncovered problems with nonsmartphone PDAs, as wireless connectivity was not reliable enough for clinicians, and certain smartphones could not meet clinicians' need to use several applications simultaneously.

Barriers to More Widespread Use

The spread of methicillin-resistant *Staphylococcus aureus* infections is leading to questions about hospitals' hygiene policies for clothing and devices, including smartphones. Infections associated with handheld computers are less significant than those spread by not washing hands, explained Anatole Menon-Johansson, a U.K.-trained physician completing a master's degree in public health at Harvard University.

"Hands are by far the most important, then white coats, shirt cuffs, stethoscopes, ties, rubber hammers, ophthalmoscope, whatever else is in your white coat pocket, and only then cell phones and PDAs," Menon-Johansson said.

The cost of integration can also be significant for hospitals. However, if hospitals do not make an investment in supporting smartphone technology, physicians using smartphones either have to double-document, entering data into both their own handheld computers and the central medical records system, or they fail to reap the advantages of up-to-date information by patients' bedsides.

70% Penetration Predicted by 2011

Getting accurate data on how many physicians use smartphones in their practice is difficult because the term "use" can be defined in a broad range from taking practice-related phone calls to data storage, computing and Internet research.

According to Thomson Healthcare research, about 31% of physicians in this country use smartphones in their practice. The Diffusion Group, a consulting firm specializing in IT, estimates higher -- that nearly half (49%) of U.S. doctors used smartphones in 2006.

Leaders in both the medical and information industries predict smartphone use in physicians' practices will grow rapidly across the globe. Selanikio of DataDyne predicts African countries will be among the most rapid adopters of wireless smartphone technology because of the relative dearth of land-based computing options.

In the United States, according to research by the Diffusion Group, smartphone use by physicians will increase to 70% over the next three years.

More on the Web:

- [Diffusion Group smartphone press release](#)
- "Many Doctors Reluctant To Use Mobile Devices for Patient Care," *iHealthBeat*, 10/1/07
- "Obstetricians Use Smartphones To Monitor Lab", *iHealthBeat*, 10/25/06